

-- 8. An ArF excimer laser which causes an electric discharge

between discharging electrodes to excite a laser gas consisting of a halogen gas, a rare gas and a buffer gas and oscillates a narrow-banded laser light, wherein:

 the buffer gas mainly contains He and, Xe is added to the laser gas. --

-- 9. The ArF excimer laser device according to claim 8, wherein

the ArF excimer laser device oscillates a narrow-banded laser light having an output including pulse frequencies higher than about 1 kHz. --

-- 10. A scanning type exposure device which performs exposure of

an entire semiconductor chip on a wafer by moving the wafer while irradiating a pulsed laser light to each of a plurality of irradiation regions smaller than an area of the semiconductor chip, wherein an ArF excimer laser of which buffer gas mainly containing He is used as a light source of the laser light. --

-- 11. The scanning type exposure device according to claim 10,

wherein the ArF excimer laser is a laser gas added with Xe. --

-- 12. An ultraviolet laser device for oscillating pulsed laser by adding an amount of 1 to 100pm of xenon gas for ultraviolet laser introduced into a chamber, and causing pulse oscillation in the chamber so as to excite the gas for ultraviolet laser to oscillate the pulsed laser, comprising:



- a xenon gas cylinder in which xenon gas is sealed;
- an ultraviolet laser gas cylinder in which the gas for ultraviolet laser is sealed;
- an ultraviolet laser gas supply piping connecting the ultraviolet laser gas cylinder and the chamber;
- a first valve disposed on the ultraviolet laser gas supply piping on the side of the chamber;
- a second valve disposed on the ultraviolet laser gas supply piping on the side of the ultraviolet laser gas cylinder;
- a xenon gas piping for connecting the xenon gas piping and the ultraviolet laser gas supplying piping between the first valve and the second valve;
- a third valve disposed on the xenon gas piping; and
- a pressure gauge for measuring a pressure within mixture piping divided by the first valve, the second valve and the third valve. --

-- 13. The ultraviolet laser device according to Claim 12, wherein the laser gas in the chamber is exhausted in a state that the second valve and the third valve are closed and the first valve is opened;

the xenon gas is supplied into the mixture piping in a state that the first valve and the second valve are closed and the third valve is opened; and


when it is measured by the pressure gauge that a gas pressure in the mixture piping has reached a predetermined gas pressure, the xenon gas in the mixture piping and the gas for ultraviolet laser in the ultraviolet laser gas cylinder are supplied into the chamber in a state that the third valve is closed and the first valve and the second valve are opened. --

-- 14. The ultraviolet laser device according to claim 12, including a controller for controlling gas flow from the xenon and ultraviolet gas cylinders to the chamber including the following steps:

opening the first valve and closing the second and third valves for exhausting the chamber,

closing the first valve and opening the third valve for flowing the xenon gas from the xenon gas cylinder into the ultraviolet laser gas supply piping,

closing the third valve,